

REMARKS

The present invention relates to a binder resin for turning paste into conductive paste, ceramic paste, and glass paste made therewith.

In the Office Action dated September 24, 2008, claims 1 - 9 and 12 - 20 were rejected under 35 U.S.C. § 103 based on WO 03/028143 (Miyake) in view of Knapczyk (Kirk-Othmer Encyclopedia of Chemical Technology, December 2000, pp 1 - 17).

In the present Amendment, the claims 1 - 6 and 10 - 20 have been canceled. Claims 7, 8, and 9 have been amended to independent form, including incorporation regarding the modified polyvinyl acetal resin. Further in this regard, it is noted that formulas (1) and (3) have been corrected for technical accuracy.

For the reasons explained in further detail below, Applicant respectfully submits that remaining claims 7, 8, and 9 are unobvious and patentable *vis-à-vis* the cited prior art, and it is therefore respectfully submitted that the rejection should now be withdrawn.

An important technical feature of present invention is the use of specific modified polyvinyl acetal resin comprising structural units represented by the general formulas (1), (2), (3) and (4) as a binder resin for conductive paste, for ceramic paste, and for glass paste.

As a binder resin for conductive paste, for ceramic paste, and for glass paste, conventionally, ethyl cellulose resins have been mainly employed. However, ethyl cellulose resins have several significant problems, such as "delamination". Responsive to this situation, polyvinyl acetal resin has been studied as a binder resin for coating paste.

However, the paste obtained by using the polyvinyl acetal resin as a binder resin has a problem that it has a poor coating property and it causes problems such as being stringy and clogging, particularly on the occasion of coating by screen printing. Consequently, peel-off

property is deteriorated, and the precision of thickness is reduced, and therefore patterns cannot be clearly drawn and production yields decrease.

The present inventors have discovered that a paste which is superior in adhesive property to a ceramic green sheet and alkali resistance, which is furthermore superior in coating property, and which can be coated by screen printing, can be obtained by using a modified polyvinyl acetal resin having a specific structure as a binder resin.

The Examiner's attention is directed to the Examples of the specification. Examples 1 - 5 which use a modified polyvinyl acetal resin show good result as conductive paste, ceramic paste and glass paste (please see Table 1). On the other hand, the Comparative Example which uses ethyl cellulose (Comparative Example 1), polyvinyl butyral resin not modified with ethylene (Comparative Example 2), and acrylic resin (Comparative Example 3) do not show good results as a conductive paste, a ceramic paste and a glass paste.

The Miyake reference teaches a binder resin containing a modified polyvinyl acetal resin with 1-20 mol% ethylene as a structural unit. Thus the modified polyvinyl acetal resin of the present invention cannot be obtained by an asserted combination of Miyake and Knapczyk, because neither Miyake nor Knapczyk teach or suggest the "extremely excellent printing property" of the presently claimed invention.

Applicant therefore respectfully submits that the presently claimed invention is not rendered obvious by the cited reference, and respectfully requests the reconsideration and withdrawal of this § 102 rejection.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the

AMENDMENT UNDER 37 C.F.R. § 1.111
Application No.: 10/561,971

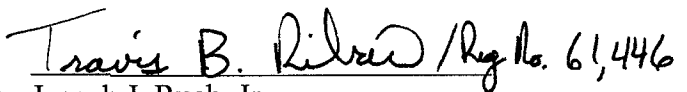
Attorney Docket No.: Q91859

Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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